

### Amendment to the Claims

The following listing of claims will replace all prior versions, and listings, of claims in the application.

#### Listing of Claims

1-33. (Canceled)

34. (Currently amended) A composition comprising:

dead *E. coli* comprising at least one modified allergen whose amino acid sequence is identical to that of a wild-type allergen, except that the modified allergen has at least one mutation in an IgE site such that the modified allergen has a reduced ability to bind to or cross-link IgE as compared with the wild-type allergen, wherein the modified allergen is encapsulated inside the dead *E. coli*, wherein the wild-type protein allergen is selected from the group consisting of:

*Ambrosia artemisiifolia* (short ragweed) antigen E (Amb a 1);

*Ambrosia artemisiifolia* (short ragweed) antigen K (Amb a 2);

*Ambrosia artemisiifolia* (short ragweed) Ra3 antigen (Amb a 3);

*Ambrosia artemisiifolia* (short ragweed) Ra5 antigen (Amb a 5);

*Ambrosia artemisiifolia* (short ragweed) Ra6 antigen (Amb a 6);

*Ambrosia artemisiifolia* (short ragweed) Ra7 antigen (Amb a 7);

*Ambrosia trifida* (giant ragweed) Ra5G antigen (Amb t 5);

*Artemisia vulgaris* (mugwort) antigen (Art v 1);

*Artemisia vulgaris* (mugwort) antigen (Art v 2);

*Helianthus annuus* (sunflower) antigen (Hel a 1);

*Helianthus annuus* (sunflower) profilin (Hel a 2);

*Mercurialis annua* (annual mercury) profilin (Mer a 1);

*Cynodon dactylon* (Bermuda grass) antigen (Cyn d 1);

*Cynodon dactylon* (Bermuda grass) antigen (Cyn d 7);

*Cynodon dactylon* (Bermuda grass) profilin (Cyn d 12);

*Dactylis glomerata* (orchard grass) AgDg1 antigen (Dac g 1);

*Dactylis glomerata* (orchard grass) antigen (Dac g 2);

*Dactylis glomerata* (orchard grass) antigen (Dac g 3);  
*Dactylis glomerata* (orchard grass) antigen (Dac g 5);  
*Holcus lanatus* (velvet grass) antigen (Hol l 1);  
*Lolium perenne* (rye grass) group I antigen (Lol p 1);  
*Lolium perenne* (rye grass) group II antigen (Lol p 2);  
*Lolium perenne* (rye grass) group III antigen (Lol p 3);  
*Lolium perenne* (rye grass) group IX antigen (Lol p 5);  
*Lolium perenne* (rye grass) antigen (Lol p 1b);  
*Lolium perenne* (rye grass) trypsin (Lol p 11);  
*Phalaris aquatica* (canary grass) antigen (Pha a 1);  
*Phleum pratense* (timothy grass) antigen (Phl p 1);  
*Phleum pratense* (timothy grass) antigen (Phl p 2);  
*Phleum pratense* (timothy grass) antigen (Phl p 4);  
*Phleum pratense* (timothy grass) antigen Ag 25 (Phl p 5);  
*Phleum pratense* (timothy grass) antigen (Phl p 6);  
*Phleum pratense* (timothy grass) profilin (Phl p 12);  
*Phleum pratense* (timothy grass) polygalacturonase (Phl p 13);  
*Poa pratensis* (Kentucky blue grass) group I antigen (Poa p 1);  
*Poa pratensis* (Kentucky blue grass) antigen (Poa p 5);  
*Sorghum halepense* (Johnson grass) antigen (Sor h 1);  
*Alnus glutinosa* (alder) antigen (Aln g 1);  
*Betula verrucosa* (birch) antigen (Bet v 1);  
*Betula verrucosa* (birch) profilin (Bet v 2);  
*Betula verrucosa* (birch) antigen (Bet v 3);  
*Betula verrucosa* (birch) antigen (Bet v 4);  
*Betula verrucosa* (birch) isoflavone reductase homologue (Bet v 5);  
*Betula verrucosa* (birch) cyclophilin (Bet v 7);  
*Carpinus betulus* (hornbeam) antigen (Car b 1);  
*Castanea sativa* (chestnut) Bet v 1 homologue (Cas s 1);  
*Castanea sativa* (chestnut) chitinase (Cas s 5);  
*Corylus avellana* (hazel) antigen (Cor a 1);

Quercus alba (white oak) antigen (Que a 1);  
Cryptomeria japonica (sugi) antigen (Cry j 1);  
Cryptomeria japonica (sugi) antigen (Cry j 2);  
Juniperus ashei (mountain cedar) antigen (Jun a 1);  
Juniperus ashei (mountain cedar) antigen (Jun a 3);  
Juniperus oxycedrus (prickly juniper) calmodulin-like antigen (Jun o 2);  
Juniperus sabinoides (mountain cedar) antigen (Jun s 1);  
Juniperus virginiana (eastern red cedar) antigen (Jun v 1);  
Fraxinus excelsior (ash) antigen (Fra c 1);  
Ligustrum vulgare (privet) antigen (Lig v 1);  
Olea europea (olive) antigen (Ole c 1);  
Olea europea (olive) profilin (Ole c 2);  
Olea europea (olive) antigen (Ole c 3);  
Olea europea (olive) antigen (Ole c 4);  
Olea europea (olive) superoxide dismutase (Ole c 5);  
Olea europea (olive) antigen (Ole c 6);  
Syringa vulgaris (lilac) antigen (Syr v 1);  
Acarus siro (mite) fatty acid-binding protein (Aca s 13);  
Blomia tropicalis (mite) antigen (Blo t 5);  
Blomia tropicalis (mite) Bt11a antigen (Blo t 12);  
Blomia tropicalis (mite) Bt6 fatty acid-binding protein (Blo t);  
Dermatophagoides pteronyssinus (mite) antigen P1 (Der p 1);  
Dermatophagoides pteronyssinus (mite) antigen (Der p 2);  
Dermatophagoides pteronyssinus (mite) trypsin (Der p 3);  
Dermatophagoides pteronyssinus (mite) amylase (Der p 4);  
Dermatophagoides pteronyssinus (mite) antigen (Der p 5);  
Dermatophagoides pteronyssinus (mite) chymotrypsin (Der p 6);  
Dermatophagoides pteronyssinus (mite) antigen (Der p 7);  
Dermatophagoides pteronyssinus (mite) glutathione transferase (Der p 8);  
Dermatophagoides pteronyssinus (mite) collagenolytic serine prot. (Der p 9);  
Dermatophagoides pteronyssinus (mite) tropomyosin (Der p 10);

*Dermatophagoides pteronyssinus* (mite) apolipophorin like p (Der p 14);  
*Dermatophagoides microceras* (mite) antigen (Der m 1);  
*Dermatophagoides farinae* (mite) antigen (Der f 1);  
*Dermatophagoides farinae* (mite) antigen (Der f 2);  
*Dermatophagoides farinae* (mite) antigen (Der f 3);  
*Dermatophagoides farinae* (mite) tropomyosin (Der f 10);  
*Dermatophagoides farinae* (mite) paramyosin (Der f 11);  
*Dermatophagoides farinae* (mite) Mag 3, apolipophorin (Der f 14);  
*Euroglyphus maynei* (mite) apolipophorin (Eur m 14);  
*Lepidoglyphus destructor* (storage mite) antigen (Lep d 2.0101);  
*Lepidoglyphus destructor* (storage mite) antigen (Lep d 2.0102);  
*Bos domesticus* (cow) Ag3, lipocalin (Bos d 2);  
*Bos domesticus* (cow) alpha-lactalbumin (Bos d 4);  
*Bos domesticus* (cow) beta-lactalbumin (Bos d 5);  
*Bos domesticus* (cow) serum albumin (Bos d 6);  
*Bos domesticus* (cow) immunoglobulin (Bos d 7);  
*Bos domesticus* (cow) casein (Bos d 8);  
*Canis familiaris* (dog) antigen (Can f 1);  
*Canis familiaris* (dog) antigen (Can f 2);  
*Canis familiaris* (dog) albumin (Can f ?);  
*Equus caballus* (horse) lipocalin (Equ c 1);  
*Equus caballus* (horse) lipocalin (Equ c 2);  
*Felis domesticus* (cat) cat-1 antigen (Fel d 1);  
*Mus musculus* (mouse) MUP antigen (Mus m 1);  
*Rattus norvegicus* (rat) antigen (Rat n 1);  
*Alternaria alternata* (fungus) antigen (Alt a 1);  
*Alternaria alternata* (fungus) antigen (Alt a 2);  
*Alternaria alternata* (fungus) heat shock protein (Alt a 3);  
*Alternaria alternata* (fungus) ribosomal protein (Alt a 6);  
*Alternaria alternata* (fungus) YCP4 protein (Alt a 7);  
*Alternaria alternata* (fungus) aldehyde dehydrogenase (Alt a 10);

*Alternaria alternata* (fungus) enolase (Alt a 11);  
*Alternaria alternata* (fungus) acid. ribosomal protein P1 (Alt a 12);  
*Cladosporium herbarum* (fungus) antigen (Cla h 1);  
*Cladosporium herbarum* (fungus) antigen (Cla h 2);  
*Cladosporium herbarum* (fungus) aldehyde dehydrogenase (Cla h 3);  
*Cladosporium herbarum* (fungus) ribosomal protein);  
*Cladosporium herbarum* (fungus) YCP4 protein (Cla h 5);  
*Cladosporium herbarum* (fungus) enolase (Cla h 6);  
*Cladosporium herbarum* (fungus) acid. ribosomal protein P1 (Cla h 12);  
*Aspergillus flavus* (fungus) alkaline serine proteinase (Asp fl 13);  
*Aspergillus Fumigatus* (fungus) antigen (Asp f 1);  
*Aspergillus Fumigatus* (fungus) antigen (Asp f 2);  
*Aspergillus Fumigatus* (fungus) peroxisomal protein (Asp f 3);  
*Aspergillus Fumigatus* (fungus) antigen (Asp f 4);  
*Aspergillus Fumigatus* (fungus) metalloprotease (Asp f 5);  
*Aspergillus Fumigatus* (fungus) Mn superoxide dismutase (Asp f 6);  
*Aspergillus Fumigatus* (fungus) antigen (Asp f 7);  
*Aspergillus Fumigatus* (fungus) ribosomal protein P2 (Asp f 8);  
*Aspergillus Fumigatus* (fungus) antigen (Asp f 9);  
*Aspergillus Fumigatus* (fungus) aspartic protease (Asp f 10);  
*Aspergillus Fumigatus* (fungus) peptidyl-prolyl isomerase (Asp f 11);  
*Aspergillus Fumigatus* (fungus) heat shock protein P70 (Asp f 12);  
*Aspergillus Fumigatus* (fungus) alkaline serine proteinase (Asp f 13);  
*Aspergillus Fumigatus* (fungus) antigen (Asp f 15);  
*Aspergillus Fumigatus* (fungus) antigen (Asp f 16);  
*Aspergillus Fumigatus* (fungus) antigen (Asp f 17);  
*Aspergillus Fumigatus* (fungus) vacuolar serine (Asp f 18);  
*Aspergillus niger* (fungus) beta-xylosidase (Asp n 14);  
*Aspergillus niger* (fungus) antigen (Asp n 18);  
*Aspergillus niger* (fungus) vacuolar serine proteinase;  
*Aspergillus oryzae* (fungus) TAKA-amylase A (Asp o 2);

Aspergillus oryzae (fungus) alkaline serine proteinase (Asp o 13);

Penicillium brevicompactum (fungus) alkaline serine proteinase (Pen b 13);

Penicillium citrinum (fungus) heat shock protein P70 (Pen c 1);

Penicillium citrinum (fungus) peroxisomal membrane protein (Pen c 3);

Penicillium citrinum (fungus) alkaline serine proteinase (Pen c 13);

Penicillium notatum (fungus) N-acetyl glucosaminidase (Pen n 1);

Penicillium notatum (fungus) alkaline serine proteinase (Pen n 13);

Penicillium notatum (fungus) vacuolar serine proteinase (Pen n 18);

Penicillium oxalicum (fungus) vacuolar serine proteinase (Pen o 18);

Trichophyton rubrum (fungus) antigen (Tri r 2);

Trichophyton rubrum (fungus) serine protease (Tri r 4);

Trichophyton tonsurans (fungus) antigen (Tri t 1);

Trichophyton tonsurans (fungus) serine protease (Tri t 4);

Candida albicans (fungus) antigen (Cand a 1);

Candida boidinii (fungus) antigen (Cand b 2);

Malassezia furfur (fungus) antigen (Mal f 1);

Malassezia furfur (fungus) MF1 peroxisomal membrane protein (Mal f 2);

Malassezia furfur (fungus) MF2 peroxisomal membrane protein (Mal f 3);

Malassezia furfur (fungus) antigen (Mal f 4);

Malassezia furfur (fungus) antigen (Mal f 5);

Malassezia furfur (fungus) cyclophilin homologue (Mal f 6);

Psilocybe cubensis (fungus) antigen (Psi c 1);

Psilocybe cubensis (fungus) cyclophilin (Psi c 2);

Coprinus comatus (shaggy cap) antigen (Cop c 1);

Coprinus comatus (shaggy cap) antigen (Cop c 2);

Coprinus comatus (shaggy cap) antigen (Cop c 3);

Coprinus comatus (shaggy cap) antigen (Cop c 5);

Coprinus comatus (shaggy cap) antigen (Cop c 7);

Aedes aegyptii (mosquito) apyrase (Aed a 1);

Aedes aegyptii (mosquito) antigen (Aed a 2);

Apis mellifera (honey bee) phospholipase A2 (Api m 1);

*Apis mellifera* (honey bee) hyaluronidase (Api m 2);  
*Apis mellifera* (honey bee) melittin (Api m 4);  
*Apis mellifera* (honey bee) antigen (Api m 6);  
*Bombus pennsylvanicus* (bumble bee) phospholipase (Bom p 1);  
*Bombus pennsylvanicus* (bumble bee) protease (Bom p 4);  
*Blattella germanica* (German cockroach) Bd90k (Bla g 1);  
*Blattella germanica* (German cockroach) aspartic protease (Bla g 2);  
*Blattella germanica* (German cockroach) calyacin (Bla g 4);  
*Blattella germanica* (German cockroach) glutathione transferase (Bla g 5);  
*Blattella germanica* (German cockroach) troponin C (Bla g 6);  
*Periplaneta americana* (American cockroach) Cr-P11 (Per a 1);  
*Periplaneta americana* (American cockroach) Cr-P1 (Per a 3);  
*Periplaneta americana* (American cockroach) tropomyosin (Per a 7);  
*Chironomus thummi thummi* (midge) hemoglobin (Chi t 1-9);  
*Chironomus thummi thummi* (midge) component III (Chi t 1.01);  
*Chironomus thummi thummi* (midge) component IV (Chi t 1.02);  
*Chironomus thummi thummi* (midge) component I (Chi t 2.0101);  
*Chironomus thummi thummi* (midge) component IA (Chi t 2.0102);  
*Chironomus thummi thummi* (midge) component II-beta (Chi t 3);  
*Chironomus thummi thummi* (midge) component IIIA (Chi t 4);  
*Chironomus thummi thummi* (midge) component VI (Chi t 5);  
*Chironomus thummi thummi* (midge) component VIIA (Chi t 6.01);  
*Chironomus thummi thummi* (midge) component IX (Chi t 6.02);  
*Chironomus thummi thummi* (midge) component VIIB (Chi t 7);  
*Chironomus thummi thummi* (midge) component VIII (Chi t 8);  
*Chironomus thummi thummi* (midge) component X (Chi t 9);  
*Dolichovespula maculata* (white face hornet) phospholipase (Dol m 1);  
*Dolichovespula maculata* (white face hornet) hyaluronidase (Dol m 2);  
*Dolichovespula maculata* (white face hornet) antigen 5 (Dol m 5);  
*Dolichovespula arenaria* (yellow hornet) antigen 5 (Dol a 5);  
*Polistes annularis* (wasp) phospholipase A1 (Pol a 1);

*Polistes annularies* (wasp) hyaluronidase (Pol a 2);  
*Polistes annularies* (wasp) antigen 5 (Pol a 5);  
*Polistes dominulus* (Mediterranean paper wasp) antigen (Pol d 1);  
*Polistes dominulus* (Mediterranean paper wasp) serine protease (Pol d 4);  
*Polistes dominulus* (Mediterranean paper wasp) antigen (Pol d 5);  
*Polistes exclamans* (wasp) phospholipase A1 (Pol e 1);  
*Polistes exclamans* (wasp) antigen 5 (Pol e 5);  
*Polistes fuscatus* (wasp) antigen 5 (Pol f 5);  
*Polistes metricus* (wasp) antigen 5 (Pol m 5);  
*Vespa crabro* (European hornet) phospholipase (Vesp c 1);  
*Vespa crabro* (European hornet) antigen 5 (Vesp c 5.0101);  
*Vespa crabro* (European hornet) antigen 5 (Vesp c 5.0102);  
*Vespa mandarina* (giant Asian hornet) antigen (Vesp m 1.01);  
*Vespa mandarina* (giant Asian hornet) antigen (Vesp m 1.02);  
*Vespa mandarina* (giant Asian hornet) antigen (Vesp m 5);  
*Vespula flavopilosa* (yellowjacket) antigen 5 (Ves f 5);  
*Vespula germanica* (yellowjacket) antigen 5 (Ves g 5);  
*Vespula maculifrons* (yellowjacket) phospholipase A1 (Ves m 1);  
*Vespula maculifrons* (yellowjacket) hyaluronidase (Ves m 2);  
*Vespula maculifrons* (yellowjacket) antigen 5 (Ves m 5);  
*Vespula pennsylvanica* (yellowjacket) (antigen 5Ves p 5);  
*Vespula squamosa* (yellowjacket) antigen 5 (Ves s 5);  
*Vespula vidua* (wasp) antigen (Ves vi 5);  
*Vespula vulgaris* (yellowjacket) phospholipase A1 (Ves v 1);  
*Vespula vulgaris* (yellowjacket) hyaluronidase (Ves v 2);  
*Vespula vulgaris* (yellowjacket) antigen 5 (Ves v 5);  
*Myrmecia pilosula* (Australian jumper ant) antigen (Myr p 1);  
*Myrmecia pilosula* (Australian jumper ant) antigen (Myr p 2);  
*Solenopsis geminata* (tropical fire ant) antigen (Sol g 2);  
*Solenopsis geminata* (tropical fire ant) antigen (Sol g 4);  
*Solenopsis invicta* (fire ant) antigen (Sol i 2);



*Solenopsis invicta* (fire ant) antigen (Sol i 3);  
*Solenopsis invicta* (fire ant) antigen (Sol i 4);  
*Solenopsis saevissima* (Brazilian fire ant) antigen (Sol s 2);  
*Gadus callarias* (cod) allergen M (Gad c 1);  
*Salmo salar* (Atlantic salmon) parvalbumin (Sal s 1);  
*Bos domesticus* (cow) alpha-lactalbumin (Bos d 4);  
*Bos domesticus* (cow) beta-lactalbumin (Bos d 5);  
*Bos domesticus* (cow) serum albumin (Bos d 6);  
*Bos domesticus* (cow) immunoglobulin (Bos d 7);  
*Bos domesticus* (cow) casein (Bos d 8);  
*Gallus domesticus* (chicken) ovomucoid (Gal d 1);  
*Gallus domesticus* (chicken) ovalbumin (Gal d 2);  
*Gallus domesticus* (chicken) conalbumin; A22 (Gal d 3);  
*Gallus domesticus* (chicken) lysozyme (Gal d 4);  
*Gallus domesticus* (chicken) serum albumin (Gal d 5);  
*Metapenaeus ensis* (shrimp) tropomyosin (Met c 1);  
*Penaeus aztecus* (shrimp) tropomyosin (Pen a 1);  
*Penaeus indicus* (shrimp) tropomyosin (Pen i 1);  
*Todarodes pacificus* (squid) tropomyosin (Tod p 1);  
*Haliotis Midae* (abalone) antigen (Hal m 1);  
*Apium graveolens* (celery) Bet v 1 homologue (Api g 1);  
*Apium graveolens* (celery) profilin (Api g 4);  
*Apium graveolens* (celery) antigen (Api g 5);  
*Brassica juncea* (oriental mustard) 2S albumin (Bra j 1);  
*Brassica rapa* (turnip) prohevein-like protein (Bar r 2);  
*Hordeum vulgare* (barley) BMAI-1 (Hor v 1);  
*Zea mays* (maize, corn) lipid transfer protein (Zea m 14);  
*Corylus avellana* (hazelnut) Bet v 1 homologue (Cor a 1.0401);  
*Malus domestica* (apple) Bet v 1 homologue (Mal d 1);  
*Malus domestica* (apple) lipid transfer protein (Mal d 3);  
*Pyrus communis* (pear) Bet v 1 homologue (Pyr c 1);

*Pyrus communis* (pear) profilin (Pyr c 4);

*Pyrus communis* (pear) isoflavone reductase homologue (Pyr c 5);

*Oryza sativa* (rice) antigen (Ory s 1);

*Persea americana* (avocado) endochitinase (Pers a 1);

*Prunus armeniaca* (apricot) Bet v 1 homologue (Pru ar 1);

*Prunus armeniaca* (apricot) lipid transfer protein (Pru ar 3);

*Prunus avium* (sweet cherry) Bet v 1 homologue (Pru av 1);

*Prunus avium* (sweet cherry) thaumatin homologue (Pru av 2);

*Prunus avium* (sweet cherry) profilin (Pru av 4);

*Prunus persica* (peach) lipid transfer protein (Pru p 3);

*Sinapis alba* (yellow mustard) 2S albumin (Sin a 1);

*Glycine max* (soybean) HPS (Gly m 1.0101);

*Glycine max* (soybean) HPS (Gly m 1.0102);

*Glycine max* (soybean) antigen (Gly m 2);

*Glycine max* (soybean) profilin (Gly m 3);

*Arachis hypogaea* (peanut) vicilin (Ar a h 1);

*Arachis hypogaea* (peanut) (conglutin Ar a h 2);

*Arachis hypogaea* (peanut) glycinin (Ar a h 3);

*Arachis hypogaea* (peanut) glycinin (Ar a h 4);

*Arachis hypogaea* (peanut) (profilin Ar a h 5);

*Arachis hypogaea* (peanut) conglutin homologue (Ar a h 6);

*Arachis hypogaea* (peanut) conglutin homologue (Ar a h 7);

*Actinidia chinensis* (kiwi) cysteine protease (Act c 1);

*Solanum tuberosum* (potato) patatin (Sol t 1);

*Bertholletia excelsa* (Brazil nut) 2S albumin (Ber e 1);

*Juglans regia* (English walnut) 2S albumin (Jug r 1);

*Juglans regia* (English walnut) vicilin (Jug r 2);

*Ricinus communis* (castor bean) 2S albumin (Ric c 1);

*Anisakis simplex* (nematode) antigen (Ani s 1);

*Anisakis simplex* (nematode) paramyosin (Ani s 2);

*Ascaris suum* (worm) antigen (Asc s 1);

*Aedes aegyptii* (mosquito) apyrase (Acd a 1);  
*Aedes aegyptii* (mosquito) antigen (Acd a 2);  
*Hevea brasiliensis* (rubber) elongation factor (Hev b 1);  
*Hevea brasiliensis* (rubber) 1,3-glucanase (Hev b 2);  
*Hevea brasiliensis* (rubber) antigen (Hev b 3);  
*Hevea brasiliensis* (rubber) component of microhelix protein complex (Hev b 4);  
*Hevea brasiliensis* (rubber) antigen (Hev b 5);  
*Hevea brasiliensis* (rubber) hevein precursor (Hev b 6.01);  
*Hevea brasiliensis* (rubber) hevein (Hev b 6.02);  
*Hevea brasiliensis* (rubber) C-terminal fragment antigen (Hev b 6.03);  
*Hevea brasiliensis* (rubber) patatin homolog (Hev b 7);  
*Hevea brasiliensis* (rubber) profilin (Hev b 8);  
*Hevea brasiliensis* (rubber) enolase (Hev b 9);  
*Hevea brasiliensis* (rubber) Mn-superoxide dismut (Hev b 10);  
*Ctenocephalides felis felis* (cat flea) antigen (Cte f 1);  
*Homo sapiens* (human autoallergen) antigen (Hom s 1);  
*Homo sapiens* (human autoallergen) antigen (Hom s 2);  
*Homo sapiens* (human autoallergen) antigen (Hom s 3);  
*Homo sapiens* (human autoallergen) antigen (Hom s 4); and  
*Homo sapiens* (human autoallergen) antigen (Hom s 5); and  
 a pharmaceutically acceptable carrier appropriate for rectal, vaginal, nasal, oral, buccal, or mucosal delivery.

wherein the wild-type allergen is selected from the group consisting of the allergens presented in the following Table:

ALLERGEN SOURCE	SYSTEMATIC AND ORIGINAL NAMES	MW kDa	SEQ	ACCESSION NO. OR REFERENCES
<u>WEED POLLENS</u>				
<u><i>Asterales</i></u>				
Ambrosia artemisiifolia (short ragweed)	Amb a 1; antigen-E	38	G	8. Griffith, L.J., J. Pollock, D.G. Klapper, B.L. Rogers, and A.K. Nault. 1991. Sequence polymorphism of Amb a-I and Amb a-II, the major allergens in Ambrosia artemisiifolia (short ragweed). Int. Arch. Allergy Appl. Immunol. 96:296-304;

				20. — Rafnar, T., I. J. Griffith, M. C. Kuo, J. F. Bond, B. L. Rogers, and D.G. Klapper. 1991. Cloning of Amb a I (Antigen E), the major allergen family of short ragweed pollen. <i>J. Biol. Chem.</i> 266:1229-1236.
Amb a-2; antigen-K	38	C		8. — Griffith, I.J., J. Pollock, D.G. Klapper, B.L. Rogers, and A.K. Nault. 1991. Sequence polymorphism of Amb a I and Amb a II, the major allergens in <i>Ambrosia artemisiifolia</i> (short ragweed). <i>Int. Arch. Allergy Appl. Immunol.</i> 96:296-304.  21. — Rogers, B.L., J.P. Morgenstern, I.J. Griffith, X.B. Yu, C.M. Counsell, A.W. Brauer, T.P. King, R.D. Garman, and M.C. Kuo. 1991. Complete sequence of the allergen Amb a II-recombinant expression and reactivity with T-cells from ragweed allergic patients. <i>J. Immunol.</i> 147:2547-2552.
Amb a-3; Ra3	11	C		22. — Klapper, D.G., L. Goodfriend, and J.D. Capra. 1980. Amino acid sequence of ragweed allergen Ra3. <i>Biochemistry</i> 19:5729-5734.
Amb a-5; Ra5	5	C		11. — Metzler, W. J., K. Valentine, M. Roebber, D. G. Marsh, and L. Mueller. 1992. Proton resonance assignments and three dimensional solution structure of the ragweed allergen Amb a V by nuclear magnetic resonance spectroscopy. <i>Biochemistry</i> 31:8697-8705.  23. — Ghosh, B., M.P. Perry, T. Rafnar, and D.G. Marsh. 1993. Cloning and expression of immunologically active recombinant Amb a V allergen of short ragweed ( <i>Ambrosia artemisiifolia</i> ) pollen. <i>J. Immunol.</i> 150:5391-5399.
Amb a-6; Ra6	10	C		24. — Roebber, M., R. Hussain, D. G. Klapper, and D. G. Marsh. 1983. Isolation and properties of a new short ragweed pollen allergen, Ra6. <i>J. Immunol.</i> 131:706-711.  25. — Lubahn, B., and D.G. Klapper. 1993. Cloning and characterization of ragweed allergen Amb a VI (abst). <i>J. Allergy Clin. Immunol.</i> 91:338.
Amb a-7; Ra7	12	P		26. — Roebber, M., and D.G. Marsh. 1991. Isolation and characterization of allergen Amb a VII from short ragweed pollen. <i>J. Allergy Clin. Immunol.</i> 87:324.
Amb a-2	11	C		27. — Rogers, B.L., J. Pollock, D.G. Klapper, and I.J. Griffith. 1993. Cloning, complete sequence, and recombinant expression of a novel allergen from short ragweed pollen

Ambrosia trifida (giant ragweed)	Amb t 5; Ra5G	4-4	€	(abst). J. Allergy Clin. Immunol. 91:339. 9. — Roebber, M., D. G. Klapper, L. Goodfriend, W. B. Bias, S. H. Hsu, and D. G. Marsh. 1985. Immunochemical and genetic studies of Amb t V (Ra5G); an Ra5 homologue from giant ragweed pollen. J. Immunol. 134:3062-3069.  10. — Metzler, W. J., K. Valentine, M. Roebber, M. Friedrichs, D. G. Marsh, and L. Mueller. 1992. Solution structures of ragweed allergen Amb t V. Biochemistry 31:5117-5127.  28. — Goodfriend, L., A. M. Choudhury, D. G. Klapper, K. M. Coulter, G. Dorval, J. DelCarpio, and C. K. Osterland. 1985. Ra5G, a homologue of Ra5 in giant ragweed pollen: isolation, HLA-DR-associated activity and amino acid sequence. Mol. Immunol. 22:899-906.
Artemisia vulgaris (mugwort)	Art v 1 Art v 2	27-29 35	€ P	28A. — Breitenbach M. pers. comm. 29. — Nilsen, B. M., K. Sletten, M. O'Neill, B. Smestad Paulsen, and H. van Halbeek. 1991. Structural analysis of the glycoprotein allergen Art v II from pollen of mugwort (Artemisia vulgaris). J. Biol. Chem. 266:2660-2668.
Helianthus annuus (sunflower)	Hel a 1  Hel a 2; profilin	34  15-7	-  €	29A. — Jimenez A, Moreno C, Martinez J, Martinez A, Bartolome B, Guerra F, Palacios R. 1994. Sensitization to sunflower pollen: only an occupational allergy? Int Arch Allergy Immunol 105:297-307.
Mercurialis annua	Mer a 1; profilin	14-15	€	Y15240 Y12271
GRASS POLLENS				
Poales				
Cynodon dactylon (Bermuda grass)	Cyn d 1  Cyn d 7	32	€  €	30. — Smith, P. M., Suphioglu, C., Griffith, I. J., Theriault, K., Knox, R. B. and Singh, M. B. 1996. Cloning and expression in yeast Piebia pastoris of a biologically active form of Cyn d 1, the major allergen of Bermuda grass pollen. J. Allergy Clin. Immunol. 98:331-343.  S83343  31. — Suphioglu, C., Ferreira, F., and Knox, R. B. 1997. Molecular cloning and immunological characterisation of Cyn d 7, a novel calcium-binding allergen from Bermuda grass pollen. FEBS Lett. 402:167-172.

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	Cyn d 12; profilin	14	E	31a. Asturias JA, Arilla MC, Gomez-Bayon N, Martinez J, Martinez A, and Palacios R. 1997. Cloning and high level expression of Cynodon dactylon (Bermuda grass) pollen profilin (Cyn d 12) in Escherichia coli: purification and characterization of the allergen. Clin Exp Allergy 27:1307-1313.  Y08390
Dactylis glomerata (orchard grass)	Dae g 1; AgDg1	32	P	32. — Mecheri, S., G. Peltre, and B. David. 1985. Purification and characterization of a major allergen from Dactylis glomerata pollen: The Ag Dg 1. Int. Arch. Allergy Appl. Immunol. 78:283-289.
	Dae g 2	44	E	33. — Roberts, A.M., L.J. Bevan, P.S. Flora, I. Jepson, and M.R. Walker. 1992. Nucleotide sequence of cDNA encoding the Group II allergen of Cocksfoot Orchard grass (Dactylis glomerata), Dae g II. Allergy 48:615-623.  S45254
	Dae g 3		E	33a. Guerin-Marchand, C., Senechal, H., Bouin, A.P., Leduc-Brodard, V., Taudou, G., Weyer, A., Peltre, G. and David, B. 1996. Cloning, sequencing and immunological characterization of Dae g 3, a major allergen from Dactylis glomerata pollen. Mol. Immunol. 33:797-806.  U25343
	Dae g 5	34	P	34. — Klysner, S., K. Welinder, H. Lowenstein, and F. Matthiesen. 1992. Group V allergens in grass pollen IV. Similarities in amino acid compositions and amino terminal sequences of the group V allergens from Lolium perenne, Poa pratensis and Dactylis glomerata. Clin. Exp. Allergy 22: 491-497.
Holcus lanatus (velvet grass)	Hol 11		E	Z27084 Z68893
Lolium perenne (rye grass)	Lol p 1; group I	27		35. — Perez, M., G. Y. Ishioka, L. E. Walker, and R. W. Chesnut. 1990. cDNA cloning and immunological characterization of the rye grass allergen Lol p 1. J. Biol. Chem. 265:16210-16215.  36. — Griffith, I. J., P. M. Smith, J. Pollock, P. Theerakulpisut, A. Avcioglu, S. Davies, T. Hough, M. B. Singh, R. J. Simpson, L. D. Ward, and R. B. Knox. 1991. Cloning and sequencing of Lol p 1, the major allergenic protein of rye grass pollen. FEBS Letters

	Lol p 2; group II	11	<p>279:210-215.</p> <p>37. — Ansari, A. A., P. Shenbagamurthi, and D.G. Marsh. 1989. Complete amino acid sequence of a Lolium perenne (perennial rye grass) pollen allergen, Lol p II. J. Biol. Chem. 264:11181-11185.</p> <p>37a. — Sidoli, A., Tamborini, E., Giuntini, I., Levi, S., Volonte, G., Pagni, C., De Lalla, C., Sicecardi, A. G., Baralle, F. E., Galliani, S. and Arosio, P. 1993. Cloning, expression, and immunological characterization of recombinant Lolium perenne allergen Lol p II. J. Biol. Chem. 268:21819-21825.</p> <p>X73363</p>
	Lol p 3; group III	11	<p>38. — Ansari, A. A., P. Shenbagamurthi, and D. G. Marsh. 1989. Complete primary structure of a Lolium perenne (perennial rye grass) pollen allergen, Lol p III: Comparison with known Lol p I and II sequences. Biochemistry 28:8665-8670.</p>
	Lol p 5; Lol p IX;	31/35	<p>34. — Klysner, S., K. Welinder, H. Lowenstein, and F. Matthiesen. 1992. Group V allergens in grass pollen IV: Similarities in amino acid compositions and amino terminal sequences of the group V allergens from Lolium perenne, Poa pratensis and Dactylis glomerata. Clin. Exp. Allergy 22: 491-497.</p> <p>39. — Singh, M. B., T. Hough, P. Theerakulpisut, A. Avcioglu, S. Davies, P. M. Smith, P. Taylor, R. J. Simpson, L. D. Ward, J. McCluskey, R. Puy, and R. B. Knox. 1991. Isolation of cDNA encoding a newly identified major allergenic protein of rye grass pollen: Intracellular targeting to the amyloplast. Proc. Natl. Acad. Sci. 88:1384-1388.</p>
	Lol p Ib		
	Lol p XI; trypsin	16	<p>39a. — van Ree R, Hoffman DR, van Dijk W, Brodard V, Mahieu K, Koelerman CA, Grande M, van Leeuwen WA, Aalberse RC. 1995. Lol p XI, a new major grass pollen allergen, is a member of a family of soybean trypsin inhibitor-related proteins. J Allergy Clin Immunol 95:970-978.</p>
	inh-Related		
Phalaris aquatica (canary grass)	Pha-a I	6	<p>40. — Suphioglu, C. and Singh, M.B. 1995. Cloning, sequencing and expression in Escherichia coli of Pha-a I and four isoforms of Pha-a 5, the major allergens of canary</p>

				grass pollen. Clin. Exp. Allergy 25:853-865.  S80654
Phleum pratense (timothy grass)	Phl p 1	27	€	X78813
	Phl p 2		€	41. — Dolecek, C., Vrtala, S., Lafter, S., Steinberger, P., Kraft, D., Scheiner, O., and Valenta, R., 1993, Molecular characterization of Phl p 2, a major timothy grass (Phleum pratense) pollen allergen. FEBS Lett. 335:299-304.  X75925
	Phl p 4		P	41A. Fischer, S., Grote, M., Fahlbusch, B., Muller, W.D., Kraft, D., Valenta, R., 1996, Characterization of Phl p 4, a major timothy grass (Phleum pratense) pollen allergen. J Allergy Clin Immunol 98:189-198.
	Phl p 5; Ag25	22	€	42. — Matthiesen, F., and H. Lowenstein, 1991. — Group V allergens in grass pollens. I. Purification and characterization of the group V allergen from Phleum pratense pollen, Phl p V. Clin. Exp. Allergy 21:297-307.
	Phl p 6		€	43. — Petersen, A., Bufe, A., Schramm, G., Schlaak, M., and Becker, W.M., 1995, Characterization of the allergen group VI in timothy grass pollen (Phl p 6). II. cDNA cloning of Phl p 6 and structural comparison to grass group V. Int. Arch. Allergy Immunol. 108:55-59.  Z27082
	Phl p 12; profilin		€	44. — Valenta, R., Ball, T., Vrtala, S., Duchene, M., Kraft, D., and Scheiner, O., 1994, cDNA cloning and expression of timothy grass (Phleum pratense) pollen profilin in Escherichia coli: comparison with birch pollen profilin. Biochem. Biophys. Res. Commun. 199:106-118.  X77583
	Phl p 13; polygalacturonase	55-60	€	AJ238848
Poa pratensis (Kentucky blue grass)	Poa p 1; group I	33	P	46. — Esch, R. E., and D. G. Klapper, 1989. Isolation and characterization of a major cross-reactive grass group I allergenic determinant. Mol. Immunol. 26:S57-S61.
	Poa p 5	31/34	€	34. — Klysner, S., K. Welinder, H. Lowenstein, and F. Matthiesen, 1992, Group V allergens in grass pollen IV. Similarities in amino acid compositions and amino terminal sequences of the group V allergens from Lolium perenne, Poa pratensis and Dactylis glomerata. Clin. Exp. Allergy



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Sorghum halepense (Johnson-grass)	Sor-h-1		€	48. — Avjioglu, A., M. Singh, and R.B. Knox. 1993. Sequence analysis of Sor-h-1, the group I allergen of Johnson-grass pollen and its comparison to rye-grass Lol p-1 (abst). J. Allergy Clin. Immunol. 91:340.
TREE POLLENS				
Fagales				
Alnus glutinosa (alder)	Aln-g-1	17	€	S50892
Betula verrucosa (birch)	Bet-v-1	17	€	see list of isoallergens
	Bet-v-2; profilin	15	€	M65179
	Bet-v-3	8	€	X79267
	Bet-v-4		€	X87153/S54819
	Bet-v-5; isoflavone reductase homologue	33.5	€	AF135127
	Bet-v-7; cyclophilin	18	€	P—P81531
Carpinus betulus (hornbeam)	Car-b-1	17	€	51. — Larsen, J.N., P. Strömman, and H. Ipsen. 1992. PCR-based cloning and sequencing of isogenes encoding the tree pollen major allergen Car-b-1 from Carpinus betulus, hornbeam. Mol. Immunol. 29:703-711.
Castanea sativa (chestnut)	Cas-s-1; Bet-v-1 homologue Cas-s5; chitinase	22	P	52. — Kos T., Hoffmann-Sommergruber K., Ferreira F., Hirschwehr R., Ahorn H., Horak F., Jäger S., Spertl W., Kraft D., Scheiner O. 1993. Purification, characterization and N-terminal amino acid sequence of a new major allergen from European chestnut pollen—Cas-s-1. Biochem Biophys Res Commun 196:1086-92.
Corylus avellana (hazel)	Cor-a-1	17	€	53. — Breiteneder, H., F. Ferreira, K. Hoffman-Sommergruber, C. Ebner, M. Breitenbach, H. Rumpold, D. Kraft, and O. Scheiner. 1993. Four recombinant isoforms of Cor-a-1, the major allergen of hazel pollen. Europ. J. Biochem. 212:355-362.
Quercus alba (white oak)	Que-a-1	17	P	54. — Ipsen, H., and B.C. Hansen. 1991. The NH2-terminal amino acid sequence of the immunochemically partial identical major allergens of alder (Alnus glutinosa) Aln-g-1, birch (Betula verrucosa) Bet-v-1, hornbeam (Carpinus betulus) Car-b-1 and oak (Quercus alba) Que-a-1 pollens. Mol. Immunol. 28:1279-1288.

Cryptomeria japonica (sugi)	Cry-j-1	41-45	C	55.—Taniai, M., S. Ando, M. Usui, M. Kurimoto, M. Sakaguchi, S. Inouye, and T. Matuhasi. 1988. N-terminal amino acid sequence of a major allergen of Japanese cedar pollen (Cry-j-1). FEBS Lett. 239:329-332.
	Cry-j-2		C	56.—Griffith, I.J., A. Lussier, R. Garman, R. Koury, H. Yeung, and J. Pollock. 1993. The cDNA cloning of Cry-j-1, the major allergen of Cryptomeria japonica (Japanese cedar) (abst). J. Allergy Clin. Immunol. 91:539.
Juniperus ashei (mountain cedar)	Jun-a-1	43	P	57.—Sakaguchi, M., S. Inouye, M. Taniai, S. Ando, M. Usui, and T. Matuhasi. 1990. Identification of the second major allergen of Japanese cedar pollen. Allergy 45:309-312.
	Jun-a-3	30	P	D29772
Juniperus oxycedrus (prickly juniper)	Jun-o-2; enlmodulin-like	29	C	P81294
Juniperus sabinoides (mountain cedar)	Jun-s-1	50	P	P81295
Juniperus virginiana (eastern red cedar)	Jun-v-1	43	P	AF031471
<i>Oleales</i>				
Fraxinus excelsior (ash)	Fra-e-1	20	P	58.—Gross GN, Zimburcan JM, Capra JD 1978. Isolation and partial characterization of the allergen in mountain cedar pollen. Scand J Immunol 8:427-41.
Ligustrum vulgare (privet)	Lig-v-1	20	P	P81825
Olea-europea (olive)	Ole-e-1;	16	C	58A.—Obispo TM, Melero JA, Carpizo JA, Carreira J, Lombardero M 1993. The main allergen of Olea-europaea (Ole-e-1) is also present in other species of the oleaceae family. Clin Exp Allergy 23:311-316.
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	Ole-e-2; profilin	45-18	C	60A. Asturias JA, Arilla MC, Gomez-Bayon N, Martinez J, Martinez A, Palacios R-1997. Cloning and expression of the panallergen profilin and the major allergen (Ole e-1) from olive tree pollen. J Allergy Clin Immunol 100:365-372.
	Ole-e-3;	9-2		60B. Batanero E, Villalba M, Ledesma A, Puente XS, Rodriguez R. 1996. Ole e-3, an olive tree allergen, belongs to a widespread family of pollen proteins. Eur J Biochem 241:772-778.
	Ole-e-4;	32	P	P80741
	Ole-e-5; superoxide dismutase	16	P	P80740
	Ole-e-6;	10	C	U86342
Syringa vulgaris (Htiae)	Syr-v-1	20	P	58A. Obispo TM, Melero JA, Carpizo JA, Carreira J, Lombardero M-1993. The main allergen of Olea europaea (Ole-e-1) is also present in other species of the oleaceae family. Clin Exp Allergy 23:311-316.
MITES				
Acarus siro (mite)	Aea-s-13; fatty acid-bind. prot.	14*	C	AJ006774
Blomia tropicalis (mite)	Blo-t-5;		C	U59102
	Blo-t-12; Btl-1a		C	U27479
	Blo-t-13; Btl-6 fatty acid-binding prot		C	U58106
Dermatophagoides pteronyssinus (mite)	Der-p-1; antigen-P1	25	C	61. Chua, K. Y., G. A. Stewart, and W. R. Thomas. 1988. Sequence analysis of cDNA encoding for a major house dust mite allergen, Der-p-1. J. Exp. Med. 167:175-182.
	Der-p-2;	14	C	62. Chua, K. Y., C. R. Doyle, R. J. Simpson, K. J. Turner, G. A. Stewart, and W. R. Thomas. 1990. Isolation of cDNA coding for the major mite allergen Der-p-II by IgE plaque immunoassay. Int. Arch. Allergy Appl. Immunol. 94:118-123.
	Der-p-3; trypsin	28/30	C	63. Smith WA, Thomas WR. 1996. Comparative analysis of the genes encoding group 3 allergens from Dermatophagoides pteronyssinus and Dermatophagoides farinae. Int Arch Allergy Immunol 109:133-40.
	Der-p-4; amylase	60	C	64. Lake, F.R., L.D. Ward, R.J. Simpson, P.J. Thompson, and G.A. Stewart. 1991. House dust mite-derived amylase: Allergenicity and physicochemical characterisation. J. Allergy Clin. Immunol. 87:1035-1042.
	Der-p-5;	14	P	65. Tovey, E. R., M. C. Johnson, A. L. Roehrs, G. S. Coben, and B. A. Baldo. 1989.

				Cloning and sequencing of a cDNA expressing a recombinant house dust mite protein that binds human IgE and corresponds to an important low molecular weight allergen. J. Exp. Med. 170:1457-1462.
	Der-p 6; chymotrypsin	25	€	66. — Yasueda, H., T. Shida, T. Ando, S. Sugiyama, and H. Yamakawa. 1991. Allergenic and proteolytic properties of fourth allergens from Dermatophagoides mites. In: "Dust Mite Allergens and Asthma. Report of the 2nd international workshop" A. Todt, Ed., UCB Institute of Allergy, Brussels, Belgium, pp. 63-64.
	Der-p 7;	22-28	€	67. — Shen, H., D., K., Y. Chua, K., L., Lin, K., H. Hsieh, and W.R. Thomas. 1993. Molecular cloning of a house dust mite allergen with common antibody-binding specificities with multiple components in mite extracts. Clin. Exp. Allergy 23:924-40.
	Der-p 8; glutathione transferase		P	67A. O'Neil GM, Donovan GR, Baldo BA. 1994. Cloning and characterization of a major allergen of the house dust mite Dermatophagoides pteronyssinus; homologous with glutathione S-transferase. Biochim Biophys Acta, 1219:521-528.
	Der-p 9; collagenolytic serine prot.		€	67B. King C, Simpson RJ, Moritz RL, Reed GE, Thompson PJ, Stewart GA. 1996. The isolation and characterization of a novel collagenolytic serine protease allergen (Der-p 9) from the dust mite Dermatophagoides pteronyssinus. J Allergy Clin Immunol 98:739-47.
	Der-p 10; tropomyosin	26		Y14906
	Der-p 14; apolipoprotein-like p		€	Epton p.e.
Dermatophagoides microceras (mite)	Der-m 1;	25	P	68. — Lind P, Hansen OC, Horn N. 1988. The binding of mouse hybridoma and human IgE-antibodies to the major fecal allergen, Der-p I of D. pteronyssinus. J. Immunol. 140:4256-4262.
Dermatophagoides farinae (mite)	Der-f 1;	25	€	69. — Dilworth, R. J., K. Y. Chua, and W. R. Thomas. 1991. Sequence analysis of cDNA coding for a major house dust allergen Der-f I. Clin. Exp. Allergy 21:25-32.
	Der-f 2;	14	€	70. — Nishiyama, C., T. Yunki, T. Takai, Y. Okumura, and H. Okudaira. 1993. Determination of three disulfide bonds in a major house dust mite allergen, Der-f II. Int. Arch. Allergy Immunol. 101:159-166.
				71. — Trudinger, M., K. Y. Chua, and W. R. Thomas. 1991. cDNA encoding the major dust mite allergen Der-f II. Clin. Exp. Allergy 21:33-38.

	Der f 3;	30	€	63.—Smith WA, Thomas WR. 1996. Comparative analysis of the genes encoding group 3 allergens from Dermatophagoides pteronyssinus and Dermatophagoides farinae. Int Arch Allergy Immunol 109:133-40.
	Der f 10; tropomyosin		€	72.—Aki T, Kodama T, Fujikawa A, Miura K, Shigeta S, Wada T, Jyo T, Murooka Y, Oka S, Ono K. 1995. Immunochemical characterization of recombinant and native tropomyosins as a new allergen from the house dust mite Dermatophagoides farinae. J Allergy Clin Immunol 96:74-83.
	Der f 11; paramyosin	98	€	72a
	Der f 14; Mag2, apolipophorin		€	D17686
Euroglyphus maynei (mite)	Eur m 14; apolipophorin	177	€	AF149827
Lepidoglyphus destructor (storage mite)	Lep d 2.0101;	15	€	73.—van Hage-Hamsten M, T. Bergman, E. Johansson, B. Persson, H. Jernvall, B. Harfaut, and S.G.O. Johansson. 1993. N-terminal amino acid sequence of major allergen of the mite lepidoglyphus destructor (abst). J. Allergy Clin. Immunol. 91:353.
				74.—Varela J, Venas P, Carreira J, Barbas JA, Gimenez-Gallego G, Polo F. Primary structure of Lep d 1, the main Lepidoglyphus destructor allergen. Eur J Biochem 225:93-98, 1994.
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	Lep d 2.0102;	15	€	75.—Schmidt M, van der Ploeg I, Olsson S, van Hage-Hamsten M. The complete cDNA encoding the Lepidoglyphus destructor major allergen Lep d 1. FEBS Lett 370:11-14, 1995.
ANIMALS				
Bos domesticus (domestic cattle) (see also foods)	Bos d 2; Ag2, lipocalin	20	€	76.—Rautiainen J, Rytönen M, Pelkonen J, Pentikainen J, Perola O, Virtanen T, Zeiler T, Mantylarvi R. BDA20, a major bovine dander allergen characterized at the sequence level is Bos d 2. Submitted.
	Bos d 4; alpha-lactalbumin	14.2	€	L42867
	Bos d 5; beta-lactoglobulin	18.3	€	M18780
	Bos d 6; serum albumin	67	€	X14712
	Bos d 7;	160	€	M73993
				77.—Gjesing B, Lowenstein H.



				3' non-coding region. EMBO J 3:1045-1052.
Rattus norvegicus (rat-urine)	Rat-n-1	17	€	82. — Longbottom, J. L., 1983. Characterization of allergens from the urines of experimental animals. McMillan Press, London, pp. 525-529.  83. — Lapereche, Y., K., R., Lynch, K. P., Dolans, and P. Feigelsen., 1983. Tissue specific control of alpha 2u globulin gene expression: constitutive synthesis in submaxillary gland. Cell 32:453-460.
FUNGI				
Ascomycota				
Dothidiales				
Alternaria alternata	Alt-a-1;	28	€	U82633
	Alt-a-2;	25	€	U87807
				U87808
	Alt-a-3; heat shock protein	70	€	X78222
	Alt-a-6; ribosomal protein	11	€	U87806
	Alt-a-7; YCP4 protein	22	€	X78225
	Alt-a-10; aldehyde dehydrogenase	53	€	X78227
				P42041
Cladosporium herbarum	Alt-a-11; enolase—	45	€	U82437
	Alt-a-12; acid. ribosomal prot-P1	11	€	X84216
	Cla-h-1;	13		83a, 83b
	Cla-h-2;	23		82a, 83b
	Cla-h-3; aldehyde dehydrogenase	53	€	X78228
	Cla-h-4; ribosomal protein	11	€	X78223
	Cla-h-5; YCP4 protein	22	€	X78224
	Cla-h-6; enolase	46	€	X78226
Eurotiales	Cla-h-12; acid. ribosomal prot-P1	11	€	X85180
Aspergillus Fumigatus	Asp-f1-13; alkaline serine proteinase	34		84. — Shen, et al. J. Allergy Clin. Immunol. 103:S157, 1999.
	Asp-f-1;	18	€	83781
				S39330
	Asp-f-2;	37	€	U56938
	Asp-f-3; peroxisomal protein	19	€	U20722
	Asp-f-4;	30	€	AJ001732
	Asp-f-5;	42	€	Z30424
	metalloprotease			
	Asp-f-6; Mn superoxide	26.5	€	U53561

	disulfatase			
	Asp-f-7;	12	€	AJ223315
	Asp-f-8; ribosomal protein-P2	11	€	AJ224333
	Asp-f-9;	34	€	AJ223327
	Asp-f-10; aspartic protease	34		X85092
	Asp-f-11; peptidyl-prolyl-isom	24		84A. Cramer R. Epidemiology and molecular basis of the involvement of Aspergillus fumigatus in allergic diseases. Contrib. Microbiol. Vol. 2; Karger, Basel (in press).
	Asp-f-12; heat shock prot. P70	65	€	U92465
	Asp-f-13; alkaline serine proteinase	34		84B. Shen, et al. (manuscript submitted); 1999
	Asp-f-15;	16	€	AJ002026
	Asp-f-16;	43	€	g3643813
	Asp-f-17;	34	€	AJ224865
	Asp-f-18; vacuolar serine	90		84C. Shen HD, Ling WL, Tan MF, Wang SR, Chou H, Han SH. Vacuolar serine proteinase: A major allergen of Aspergillus fumigatus. 10th International Congress of Immunology, Abstract, 1998.
	Asp-f-2;	55	P	85. Kumar, A., L.V. Reddy, A. Sochanik, and V.P. Kurup. 1993. Isolation and characterization of a recombinant heat shock protein of Aspergillus fumigatus. J. Allergy Clin. Immunol. 91:1024-1030.
	Asp-f-2;		P	86. Teshima, R., H. Ikebuchi, J. Sawada, S. Miyachi, S. Kitani, M. Iwama, M. Irie, M. Ichimoe, and T. Terao. 1993. Isolation and characterization of a major allergenic component (gp55) of Aspergillus fumigatus. J. Allergy Clin. Immunol. 92:698-706.
Aspergillus niger	Asp-n-14; beta-xylosidase	105	€	AF108944
	Asp-n-18;	34	€	84B. Shen, et al. (manuscript submitted); 1999
	vacuolar-serine proteinase			
	Asp-n-2;	85	€	Z84377
Aspergillus oryzae	Asp-o-2; TAKA-amylase-A	53	€	D00434
	Asp-o-13; alkaline serine proteinase	34	€	M33218
				X17561
Penicillium brevicompactum	Pen-b-13; alkaline serine Proteinase	33		86A. Shen HD, Lin WL, Tsai JJ, Liaw SF, Han SH. 1996. Allergenic components in three different species of Penicillium: crossreactivity among major allergens. Clin Exp Allergy 26:444-451.
Penicillium	Pen-e-1; heat shock protein P70	70	€	U64207



citrinum	Pen-c-3; peroxisomal membrane			86H. Shen, et al. Abstract; The XVIII Congress of the European Academy of Allergology and Clinical Immunology, Brussels, Belgium, 3-7 July 1999.
	protein			
	Pen-c-13; alkaline serine-proteinase	33		86A. Shen HD, Lin WL, Tsai JJ, Liaw SF, Han SH. 1996. Allergenic components in three different species of <i>Penicillium</i> : crossreactivity among major allergens. Clin Exp Allergy 26:444-451.
Penicillium notatum	Pen-n-1; N-acetyl	68		87. Shen HD, Liaw SF, Lin WL, Ro LH, Yang HL, Han SH. 1995. Molecular cloning of cDNA coding for the 68 kDa allergen of <i>Penicillium notatum</i> using MoAbs. Clin Exp Allergy 25:350-356.
	glucosaminidase			
	Pen-n-13; alkaline serine-proteinase	34		89. Shen, et al. Clin. Exp. Allergy (in press), 1999.
	Pen-n-18; vacuolar serine-proteinase	32		89. Shen, et al. Clin. Exp. Allergy (in press), 1999.
Penicillium oxalicum	Pen-n-18; vacuolar serine-proteinase	34		89. Shen, et al. Clin. Exp. Allergy (in press), 1999.
Onygenales				
Trichophyton rubrum	Tri-r-2;		C	90. Woodfolk JA, Wheatley LM, Piyasena RV, Benjamin DC, Platts-Mills TA. 1998. Trichophyton antigens associated with IgE antibodies and delayed-type hypersensitivity. Sequence homology to two families of serine proteinases. J Biol Chem 273:29489-96.
	Tri-r-4; serine-protease		C	90. Woodfolk JA, Wheatley LM, Piyasena RV, Benjamin DC, Platts-Mills TA. 1998. Trichophyton antigens associated with IgE antibodies and delayed-type hypersensitivity. Sequence homology to two families of serine proteinases. J Biol Chem 273:29489-96.
Trichophyton tonsurans	Tri-t-1;	30	P	91. Duell B, L.K. Arruda, M.L. Hayden, M.D. Chapman and T.A.E. Platts-Mills. 1991. Trichophyton tonsurans Allergen I. J. Immunol. 147:96-101.
	Tri-t-4; serine-protease	83	C	90. Woodfolk JA, Wheatley LM, Piyasena RV, Benjamin DC, Platts-Mills TA. 1998. Trichophyton antigens associated with IgE antibodies and delayed-type hypersensitivity. Sequence homology to two families of serine proteinases. J Biol Chem 273:29489-96.
Saccharomycetales				
Candida albicans	Cand-a-1	40	C	88. Shen, H.D., K.B. Choo, H.H. Lee, J.C. Hsieh, and S.H. Han. 1991. The 40 kd allergen of <i>Candida albicans</i> is an alcohol dehydrogenase: molecular cloning and immunological analysis using monoclonal antibodies. Clin. Exp. Allergy 21:675-681.
Candida boidinii	Cand-b-2	20	C	J04984;

				J04985
<i>Basidiomycota</i>				
<i>Basidiolaelastomycetes</i>				
<i>Malassezia furfur</i>	Mal f-1;			91A. Schmidt M, Zargari A, Holt P, Lindbom L, Hellman U, Whitley P, van der Ploeg I, Harfast B, Scheynius A. 1997. The complete cDNA sequence and expression of the first major allergenic protein of <i>Malassezia furfur</i> , Mal f-1. <i>Eur J Biochem</i> 246:181-185.
	Mal f-2; MF1 peroxisomal membrane-protein	21	G	AB011804
	Mal f-3; MF2 peroxisomal membrane-protein	20	G	AB011805
	Mal f-4;	35	G	Takesako, p.e.
	Mal f-5;	18*	G	AJ011955
	Mal f-6; cyclophilin homologue	17*	G	AJ011956
<i>Basidiomycetes</i>				
<i>Psilocybe cubensis</i>	Psi-e-1; Psi-e-2; cyclophilin—	16		91D. Horner WE, Reese G, Lehrer SB. 1995. Identification of the allergen Psi-e-2 from the basidiomycete <i>Psilocybe cubensis</i> as a fungal cyclophilin. <i>Int Arch Allergy Immunol</i> 107:298-300.
<i>Coprinus comatus</i> (shaggy cap)	Cop-e-1;	11	G	AJ132235
	Cop-e-2;			
	Cop-e-3;			Brander, p.e.
	Cop-e-5;			Brander, p.e.
	Cop-e-7;			Brander, p.e.
<i>INSECTS</i>				
<i>Aedes aegyptii</i> (mosquito)	Aed-a-1; apyrase	68	G	L12389
	Aed-a-2;	37	G	M33157
<i>Apis mellifera</i> (honey-bee)	Api-m-1; phospholipase A2	16	G	92. Kuehler, K., M. Gmachl, M. J. Sippl, and G. Kreil. 1989. Analysis of the cDNA for phospholipase A2 from honey-bee venom glands: The deduced amino acid sequence reveals homology to the corresponding vertebrate enzymes. <i>Eur. J. Biochem.</i> 184:249-254.
	Api-m-2; hyaluronidase	44	G	93. Gmachl, M., and G. Kreil. 1993. Bee venom hyaluronidase is homologous to a membrane protein of mammalian sperm. <i>Proc. Natl. Acad. Sci. USA</i> 90:3569-3573.
	Api-m-4; melittin	3	G	94. Habermann, E. 1972. Bee and wasp venoms. <i>Science</i> 177:314-322.
	Api-m-6;	7-8	P	Kettner, p.e.
<i>Bombus pennsylvanicus</i>	Bom-p-1; phospholipase	16	P	95. Jacobson, R.S., and D.R. Hoffman. 1993. Characterization of bumblebee venom

(bumble-bee)				allergens (abst). J. Allergy Clin. Immunol. 91:187.
	Bom-p 4; protease		P	95. — Jacobson, R.S., and D.R. Hoffman. 1993. Characterization of bumblebee venom allergens (abst). J. Allergy Clin. Immunol. 91:187.
Blattella germanica (German cockroach)	Bla-g 1; Bd90k		G	96. — Arruda LK, Vailes LD, Mann BJ, Shannon J, Fox JW, Vedvick TS, Hayden ML, Chapman MD. Molecular cloning of a major cockroach (Blattella germanica) allergen, Bla-g 2. Sequence homology to the aspartic proteases. J Biol Chem 270:19563-19568, 1995.
	Bla-g 2; aspartic protease	36	G	
	Bla-g 4; calyptein	21	G	97. — Arruda LK, Vailes LD, Hayden ML, Benjamin DC, Chapman MD. Cloning of cockroach allergen, Bla-g 4, identifies ligand binding proteins (or calypteins) as a cause of IgE-antibody-responses. J Biol Chem 270:31196-31201, 1995.
	Bla-g 5; glutathione transfr.	22	G	98. — Arruda LK, Vailes LD, Benjamin DC, Chapman MD. Molecular cloning of German Cockroach (Blattella germanica) allergens. Int Arch Allergy Immunol 107:295-297, 1995.
	Bla-g 6; treponin-C	27	G	98. — Arruda LK, Vailes LD, Benjamin DC, Chapman MD. Molecular cloning of German Cockroach (Blattella germanica) allergens. Int Arch Allergy Immunol 107:295-297, 1995.
Periplaneta americana (American cockroach)	Per-a 1; Cr-PH	72-78	G	98A. Wu CH, Lee MF, Liao SC, 1995. Isolation and preliminary characterization of cDNA encoding American cockroach allergens. J Allergy Clin Immunol 96: 352-9.
	Per-a 3; Cr-PI		G	
	Per-a 7; tropomyosin	37	G	Y14854
Chironomus thummi-thummi (midges)	Chi-t 1-9; hemoglobin	16	G	99. — Mazur, G., X. Baur, and V. Liebers. 1990. Hypersensitivity to hemoglobins of the Diptera-family Chironomidae: Structural and functional studies of their immunogenic/allergenic sites. Monog. Allergy 28:121-137.
	Chi-t 1.01; component III	16	G	P02229
	Chi-t 1.02; component IV	16	G	P02230
	Chi-t 2.0101; component I	16	G	P02221
	Chi-t 2.0102; component IA	16	G	P02221
	Chi-t 3; component II-beta	16	G	P02222
	Chi-t 4; component IIIA	16	G	P02231